Amazon Rainforest Visualisation/Classification by Orbiting Radar, Enabled by Supercomputers (ARVORES)

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During the months of September/October in 1995 and May/June in 1996, the Japanese JERS-1 SAR acquired data over the South American Amazon river basin as part of NASDA's Global Rain Forest Mapping (GRFM) project for mapping the world's tropical forests. The area, twice mapped, represents 800 million square kilometers of data per season. In addition to GRFM's goal of providing a 100m resolution map of the area, a separate effort is being conducted to mosaic, calibrate and classify the dual season Amazon data at the full 12.5m resolution of JERS-1. This effort is being conducted as part of an advanced computing technology application to SAR interferometry and imaging science. While the sheer volume of data involved will not allow for its general distribution, it will provide a useful resource for conducting a variety of studies that utilise the full potential of the high resolution data set.

This paper will discuss the advantages and methodology of working with a large volume, high resolution data set in the context of the ARVORES project that is specific to the JERS-1 dual season Amazon data. The goals of this project will be to i) mosaic the entire dual season full resolution data set, ii) implement a variety of classification schemes to separate the data set into radar specific classes and iii) derive science data from the developed resource. The science applications that are envisioned for this project include i) estimate of flood inundation regions, ii) estimate of total surface area occupied by the 'water' and 'altered landcover' classes, iii) estimate of river lengths and iv) a general landcover classification. The assist in the landcover classification, the dual season JERS-1 data set will be complemented/deepened by SIR-C data taken in October, 1994. All science objectives will be facilitated by the construction of the basin-wide calibration, mosaic and classification of the data set.

This work has been performed at the Jet Propulsion Laboratory, California Institute of Technology under a grant from the National Aeronautics and Space Administration.

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